

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference Cal 85117		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IT 02/00536	International filing date (day/month/year) 12.08.2002	Priority date (day/month/year) 12.08.2002	
International Patent Classification (IPC) or both national classification and IPC E21B17/10			
Applicant ENI S.P.A. et al			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 01.07.2003	Date of completion of this report 11.03.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Dantinne, P Telephone No. +31 70 340-3396 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IT 02/00536**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-13 as originally filed

Claims, Numbers

1-8 received on 18.02.2004 with letter of 17.02.2004

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-5
	No: Claims	6-8
Inventive step (IS)	Yes: Claims	
	No: Claims	1-8
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: WO 02/48501 A

D2: WO 02/02904 A

- 1) The document D1 discloses:
(Fig. 2; page 6 line 15 - page 7 line 25)

A prefabricated tubular body for use downhole,
with integral centraliser formations formed as projections which are moulded
directly onto the tubular body from mouldable materials comprising a curable resin
and hardener compound.

D1 also mentions that any known material can be suitable for the purpose
provided it is characterised by the appropriate qualities (page 9 line 15-16).
Chopped carbon fibre materials are known in the art of resin-ceramic composite
materials and this material is merely one of several straightforward possibilities
from which the skilled person would select, in accordance with required properties
of the material, without the exercise of inventive skill.

Thus, the subject-matter of claim 1 does not involve an inventive step and does
not satisfy the criterion set forth in Article 33(3) PCT.

- 2) The document D2 (page 11 line 28-30) discloses a composite centraliser
comprising a tubular core adapted to be installed on a tubular body in a manner
such as to permit rotation of the tubular body within the core in use and method of
making as described in claims 6 & 7.

Therefore the subject-matter of claims 6 and 7 is not new (Article 33(2) PCT).

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EXAMINATION REPORT - SEPARATE SHEET**

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- 3) Dependent claims 2-4 & 8 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step, the reasons being as follows:

Claim 2: D2 discloses a resin-ceramic composite material

Claim 3: D1 discloses mould, material injection, curing and removal.

Claim 4: Known finishing process of fabrication.

Claim 8: D2 discloses a metallic material and a resin-ceramic material.

CLAIMS

1. A method of providing at least one projection on a tubular body of the type required by the oil and gas industry for use in recovery of and transporting of crude oil or gas, namely oil-country-tubular goods (OCTG), said projection having a predetermined form such as a blade, ribbing, or the like stand-off projection, by providing materials capable of being moulded, applying a mould to a tubular (OCTG) body, and moulding said materials using said mould onto said tubular body.

2. A method according to claim 1, wherein the method comprises providing composite resin materials loaded with hard particles, and applying the materials directly to an exterior surface portion of a tubular body by means of a mould, and curing the resin materials to provide at least one projection of a predetermined size and shape conforming to the design of the mould pattern, said projection serving to provide lands for engagement of surfaces downhole.

3. A tubular body, having moulded thereto by a process such as that claimed in Claim 1 in a predetermined position, at least one projection having a predetermined

~~form such as a blade, ribbing, or the like stand-off projection.~~

¹
~~4.~~ A prefabricated tubular body for use downhole, said
 5 prefabricated tubular body being characterised by
 integral centraliser formations, said formations being
 formed as projections moulded directly onto the tubular
 body from mouldable materials comprising a curable resin,
 ceramic particulate filler materials, ~~optionally~~
 10 including chopped carbon fibre materials .

²
~~5.~~ A prefabricated tubular body according to claim ¹~~4~~
 wherein the said tubular body with integral centraliser
 is formed by providing a resin-ceramic composite material
 15 e.g. as powders, particles, fibrils, chopped fibres,
 beads or the like mouldable particulates, optionally
 including fillers or other moulding auxiliaries, and
 means for curing or setting the resin into a moulded form
 on said tubular body.

20 ³
~~8.~~ A prefabricated tubular body according to claim ¹~~4~~ or
 claim ²~~5~~, wherein said means for curing or setting the
 resin comprises a mould, and that mould is utilised in a
 moulding operation that comprises applying at least one
 25 appropriately contoured moulding part of the mould to a

tubular body, loading the mould with resin-ceramic materials in predetermined amounts to form the desired composite, suitably by injecting the materials into the mould, curing the materials in the mould, and removing
5 the mould part(s) to leave the desired moulded part formed on the tubular body.

4
4. A prefabricated tubular body with integral moulded centraliser according to anyone of claims ¹ ~~4~~ ³ to ~~8~~, wherein
10 after removal of the mould part(s), the tubular body is coated with resins, paints, or land surface finishing agents.

5. A tubular body according to claim 4, wherein the mouldable material is PROGUARD CRB.

6 6. A composite centraliser for installation on a tubular
15 (OCTG) body, comprises a tubular core adapted to be installed on a tubular body in a manner such as to permit rotation of the tubular body within the core in use, said tubular core having moulded thereto, in a predetermined position, at least one projection having a predetermined
20 form such as a blade, ribbing, or the like stand-off projection.

7
7. A method of making a composite centraliser comprising the selection of a tubular core suitable for installation
25 around an OCTG tubular, and providing at least one

projection on said tubular core, said projection having a predetermined form such as a blade, ribbing, or the like stand-off projection, by providing materials capable of being moulded, applying a mould to the tubular core, and
5 moulding said materials using said mould onto said tubular core.

8
10. A method according to claim ⁷~~8~~, wherein the core is made of metal, and the said projections, which are
10 moulded thereto and provide lands for surface engagement downhole, are formed from a resin-ceramic composite material e.g. as powders, particles, fibrils, chopped fibres, beads or the like mouldable particulates, optionally including fillers or other moulding
15 auxiliaries.